Mud Pies

Topic: Land and Soil

Objectives: Explore the building properties of different soil ingredients

Grade Level: all

Time: 30-45 minutes

Vocabulary:
mesh
sand
silt
clay

Materials: digging trowels, plastic bags (1 liter or 1 quart size), newspaper, sieves with several different mesh sizes, pitchers for water, paper plates, paper towels, magnifying lenses

Location: Magnolia Hall Courtyard and various locations around Piedmont Park

Background: Soil contains different sized grains of broken-down rock. The largest are sand particles. Silt particles are smaller than sand, but larger than the small clay particles. For thousands of years, people have used soil for building material. How well the soil material holds together and endures over time depends on the combination of sand, silt and clay in it. In this activity you will examine and test samples of soils in Piedmont Park for their ability to hold firmly together by making mud pies.

Advance Preparation: none

Procedure:

1. Together with one or two of your classmates, collect a plastic bag and a digging trowel from your teacher or activity leader. Fill your bag with soil from a location in Piedmont Park. Try to find fairly dry soil if you can.

2. After you have collected a soil sample, pick out any large pebbles or any large pieces of organic matter such as leaves and twigs. Collect a piece of newspaper and a paper plate from your teacher or activity leader. Place about half of the soil sample on a paper plate. Add water to the soil on the plate little by little and mix it until the soil is thick and muddy. It should have the consistency of thick biscuit dough. Use your hands to try to shape the mud into a mud pie. Leave it on the plate to dry.

3. Next pour the remaining half of your soil sample into a sieve with a large mesh. Sift the soil through the sieve. Place the particles that are left in the sieve in a separate pile on the newspaper.

4. Pour the soil that passed through the sieve into a smaller mesh sieve and sift the soil again. Make two more soil piles, one of the particles that are left in this sieve and another of the particles that passed through this sieve.

5. Use a magnifying lens to examine the three piles of different sized soil particles. Notice any differences in the textures and consistency of the three soil piles.

6. Without mixing the soil in the three piles together, try to make mud pies with soil from each of the piles. Leave them on a paper plate to dry.

Questions to think about and discuss:

1. What differences did you notice between the three sifted piles when you looked at them through the magnifying lens?

2. What happened with each of the soil piles when you tried to make mud pies? Which of the three soil piles made the best mud pies? How did the mud pies you made from the three piles compare to the pie you made with the unsifted soil sample?

3. Try experimenting with different combinations of sand, silt and clay to find the best recipe for mud pies. Compare your group's mud pies to those of your classmates.

4. What qualities do you think make a good mud pie? What qualities do you suppose make a good brick?

5. Which type of soil do you think is best for building material? What other factors can you think of besides soil type that might need to be considered when using soil as a building material?

6. Examine your mud pies after they have dried in the sun or in a warm place. Which have cracked or broken? Which dried smooth and hard? Which would you choose to use for building material?